



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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March 25, 2021

Mr. Robert Cianciarulo
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency, Region 1
5 Post Office Square
Boston, MA 02109

Re: State Concurrence Determination
Record of Decision OU1, OU2, Interim OU3– Olin Chemical Superfund Site
Wilmington, Massachusetts

Dear Mr. Cianciarulo:

The Department of Environmental Protection (“the Department”) has reviewed the Operable Unit (“OU”)1, OU2, and Interim OU3 Record of Decision (“ROD”) for Olin Chemical Superfund Site (“Site”) in Wilmington, Massachusetts dated March 2021. OU1 consists of soil, sediments, and surface water on the Olin Property (“Property”); OU2 consists of soil, surface water, and sediment areas on and off Property. OU3 consists of all groundwater, both on- and off-Property, and soil located below the water table. See attached figures for details. For the reasons described below, MassDEP concurs with the remedy selected in the ROD (“Selected Remedy”).

The Selected Remedy includes;

- an interim action to begin restoration of groundwater and to prevent unacceptable risks from exposure to Site groundwater while gathering additional information to select a final cleanup plan for groundwater (OU3); and
- a final action to address all current and potential future risks caused by contaminated soil, sediments, and surface water, Light Non-Aqueous Phase Liquid (LNAPL), and the subsurface-to-indoor air vapor intrusion (VI) pathway (OU1 and OU2).

The major components of the Selected Remedy include;

- groundwater extraction and treatment;
- multi-phase extraction (MPE) to remove LNAPL;

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.

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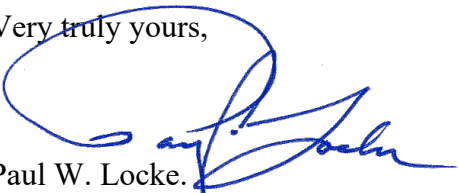
- oil/water separation;
- treatment of soil vapor using granular activated carbon (GAC);
- installation of caps and cover systems;
- soil excavation and off-site disposal;
- continued groundwater studies to close remaining data gaps and evaluate long-term groundwater cleanup options;
- long-term operation and maintenance of new and existing remedy infrastructure components;
- long-term groundwater and surface water monitoring;
- removal of Dense Aqueous Phase Liquid (“DAPL”) from the aquifer;
- removal of contaminated soil and sediments from on- and off-Property wetlands and restoration of the wetland areas;
- removal of LNAPL and associated contaminated soil vapor from the Property;
- prevention of indoor air exposures via the VI pathway; and
- restoration of the Property to allow for beneficial re-use.

The Selected Remedy includes Institutional Controls (“ICs”). ICs will require VI evaluations and/or mitigation measures such as vapor barriers or sub-slab depressurization systems (SSDSs), which are intended to preserve the remedy and ensure that any impacted soil and groundwater encountered during future intrusive activities (*e.g.*, installing subsurface utilities and/or building foundations/slabs) are appropriately managed to protect human health. ICs have been selected to maintain caps and cover systems, prevent residential, school, and daycare use of the Property, and prohibit use of groundwater in the OU3 groundwater study area unless it can be demonstrated to EPA, in consultation with the Department, that such use will not pose an unacceptable risk to human health and the environment, cause further migration of the groundwater contaminant plume, or interfere with the remedy. Periodic Five-Year Reviews by EPA are also required to assess protectiveness.

The specific remedial measures selected in this ROD are described in detail in Attachment A to this letter.

If you have any questions regarding this letter, please contact Mr. Garry Waldeck, Project Manager at (617) 348-4017.

Very truly yours,



Paul W. Locke.
Assistant Commissioner
Bureau of Waste Site Cleanup
Department of Environmental Protection

Copies to:
Lynne Jennings, USEPA

ATTACHMENT A
Remedial Measures selected in March 2021 Olin Chemical ROD

Interim Action OU3 – DAPL and Groundwater Hot Spots (GWHS)

EPA's selected remedy for the interim action for DAPL and Groundwater Hot Spots is DAPL extraction (approx. 20 wells), groundwater hot spot extraction targeting the 5,000 nanograms/Liter (ng/L) n-nitrosodimethylamine (NDMA) contour (approx. 6 wells), and treatment at a new treatment system or systems, which include the following components:

- Construction and operation of a DAPL extraction system (conceptualized with approximately four wells in the Off-Property Jewel Drive DAPL pool, approximately four wells in the Containment Area DAPL pool, and approximately 12 wells in the Main Street DAPL pool), with the final number and location of wells based on pre-design investigations (PDIs);
- Construction and operation of a groundwater extraction and treatment system (conceptualized with approximately six wells targeting the 5,000 ng/L NDMA contour), the final number and location of which will be based on PDIs, to remove and treat the mass of contaminants in groundwater hot spots; and
- Treatment of extracted DAPL and hot spot groundwater in a new treatment system or systems generally consisting of the following methodologies:
 - Treatment for DAPL:
 - Lime precipitation to remove metals, with subsequent dewatering and off-site disposal of the liquids and sludge materials;
 - Evaporation of the remaining water and off-site disposal of the residual solids; and
 - Additional treatment as described for hot spot groundwater, below;
 - Treatment for hot spot groundwater:
 - Influent equalization tank;
 - Hypochlorite flash mixer (a rapid mixer that uniformly distributes a treatment chemical) for oxidation and removal of metals (iron and manganese);
 - Breakpoint chlorination to treat ammonia;
 - Slow mix flocculation (a process by which fine particulates are caused to clump together) and lamella clarifier (a series of inclined plates on which particulates can settle) to remove solids;

- Filter press for solids dewatering;
- Off-site disposal of residual solids and sludge materials;
- GAC to ensure clarity and ultra-violet (UV) transmittance, as well as remove volatile organic compounds (VOCs);
- UV photo-oxidation for NDMA destruction; and
- Discharge of treated water.

Final Action OU1 and OU2– LNAPL and Surface Water:

EPA's selected remedy for LNAPL and Surface Water is Demolition of Plant B, MPE for LNAPL, targeted groundwater extraction to prevent impacts to surface water, and treatment at new treatment system or systems, which include the following components:

- An estimated three to five MPE wells installed within the LNAPL footprint, including beneath the Plant B building foundation, to remediate LNAPL, the smear zone, and dissolved-phase Site contaminants that would otherwise impact East Ditch Stream;
- PDIs to determine the final number and location of MPE wells;
- Treatment of recovered LNAPL and soil vapor via a skid-mounted treatment system that includes an oil/water separator to remove the LNAPL and vapor-phase GAC to treat the soil vapor;
- Off-site disposal of recovered LNAPL at an appropriate off-site permitted facility;
- Construction and operation of a new groundwater extraction and treatment system(s), with extraction wells sited based on PDIs to intercept and treat the overburden groundwater contaminant plume that impacts Site surface water;
- Re-routing of groundwater currently treated by Plant B to the new groundwater treatment system(s) (the same system(s) as for the hot spot groundwater); and
- Decommissioning and demolition of the Plant B groundwater treatment system.

Final Action OU1 and OU2 – Soil and Sediments:

EPA's selected remedy for Soil and Sediments is Containment Area cap, upland soil covers, excavation with off-site disposal and restoration of wetland soil and sediments, and limited action for trimethylpentenes (TMPs) – Institutional Controls, including vapor intrusion evaluations or vapor barriers/SSDSs, which include the following components:

- Placement of a permanent, low-permeability cap that meets Resource Conservation and Recovery Act (RCRA) Subtitle D and Massachusetts solid waste management performance standards over the Containment Area, the design and footprint of which will be determined during the Remedial Design (RD) phase;
- Closure of the existing slurry wall equalization window by grouting in place;
- Placement of a soil or asphalt cover system over areas of shallow (0-1 foot [ft]) upland soil with concentrations of Site contaminants in excess of the cleanup levels;

- Excavation of wetland soil and sediments with concentrations of Site contaminants in excess of the cleanup levels;
- Post-excavation confirmatory sampling to document limits of impacts and confirm achievement of the Remedial Action Objectives (RAOs) and cleanup levels; and
- Off-site disposal of all excavated material at an appropriate off-site permitted facility.

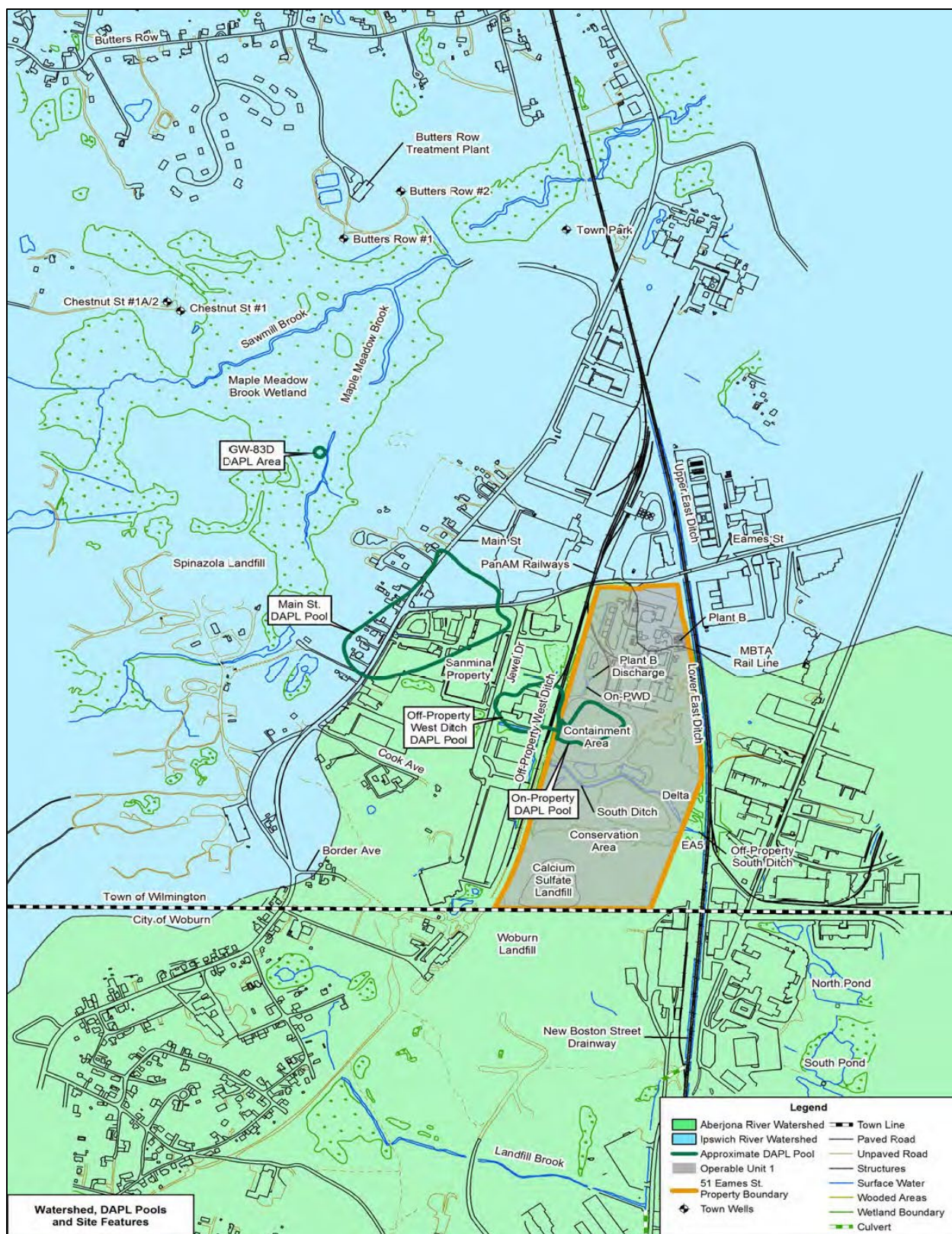
Included with the three cleanup actions above are the following:

- PDIs and/or treatability studies during the RD process to:
 - determine the final number, location, and configuration of extraction wells and other remedial components;
 - determine appropriate locations for discharge of treated groundwater to surface water; and
 - facilitate the implementation of the chosen cleanup alternatives and map the precise extent of both excavation limits and the extent of caps and cover systems;
- Restoration with hydric (wetland-type) soil and native vegetation, as needed, of any wetland habitat or floodplains altered by the remedial action, as well as restoration of any excavated or otherwise altered areas with clean, imported backfill to grade and revegetation with native vegetation to control erosion;
- Long-term maintenance and monitoring of any new and existing remedy infrastructure components, including the Calcium Sulfate Landfill (CSL);
- Long-term monitoring of the groundwater plume and surface water, to evaluate remedy effectiveness;
- Institutional Controls to 1) prohibit future residential use at the Property; 2) prohibit the use of groundwater in the OU3 groundwater study area (for example, for potable, irrigation, or industrial purposes) unless it can be demonstrated to EPA, in consultation with the Commonwealth, that such use will not pose an unacceptable risk to human health and the environment, cause further migration of the groundwater contaminant plume, or interfere with the remedy; 3) prevent disturbance of any engineered systems and any other new and existing remedy infrastructure components; 4) prevent contact with soil beneath cover systems; and 5) require either a VI evaluation or vapor mitigation system be installed if a new building is constructed or altered on the Property (examples of Institutional Controls include Notice of Activity and Use Limitation (NAUL), Grant of Environmental Restriction and Easement (GERE),¹ town ordinance, advisories, building permit requirements, and other administrative controls); and
- Periodic Five Year Reviews to ensure the remedy remains protective.

¹ NAULs and GEREs are approved forms of Massachusetts land use restrictions established under the Massachusetts Contingency Plan (MCP).

In parallel to the selected remedy, the following activities will continue as part of the OU3 RI/FS:

- Continued studies to close remaining data gaps, including an improved characterization of bedrock topography and fractures and further delineation of the horizontal and vertical extent of groundwater contamination; and
- Evaluation of long term groundwater cleanup options, leading to a selection of a final cleanup plan for OU3



Area map. Shown are the major features of the Olin Site, watersheds, nearby surface waters, and the pools of Dense Aqueous-Phase Liquid (DAPL). Site straddles two watersheds – the Ipswich River Watershed to the north (in blue) and the Aberjona River Watershed to the south (in green).

Visible are the subsurface pools of DAPL (shown in green outline), located in depressions on the top of bedrock.

Figure - 1



Figure - 2

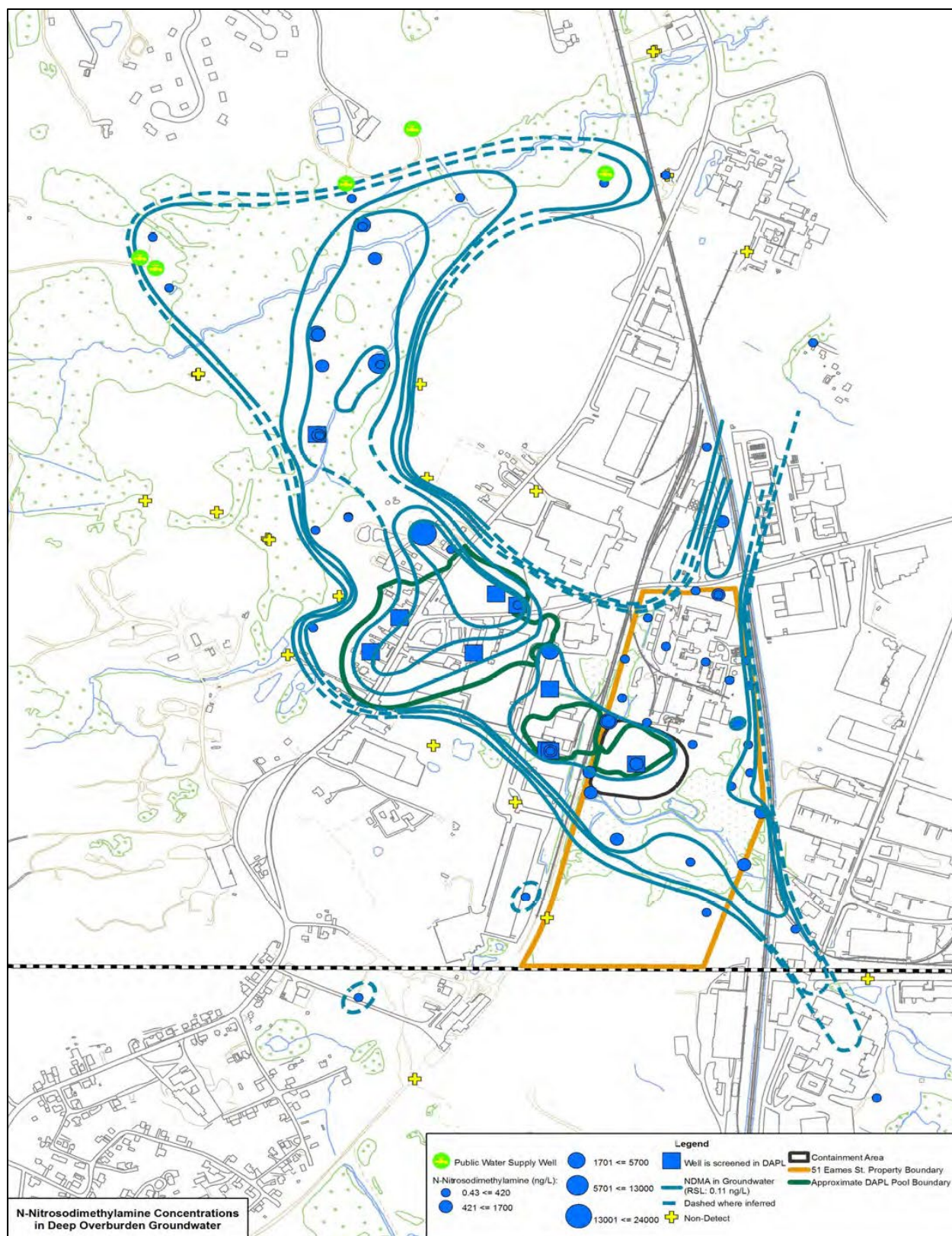


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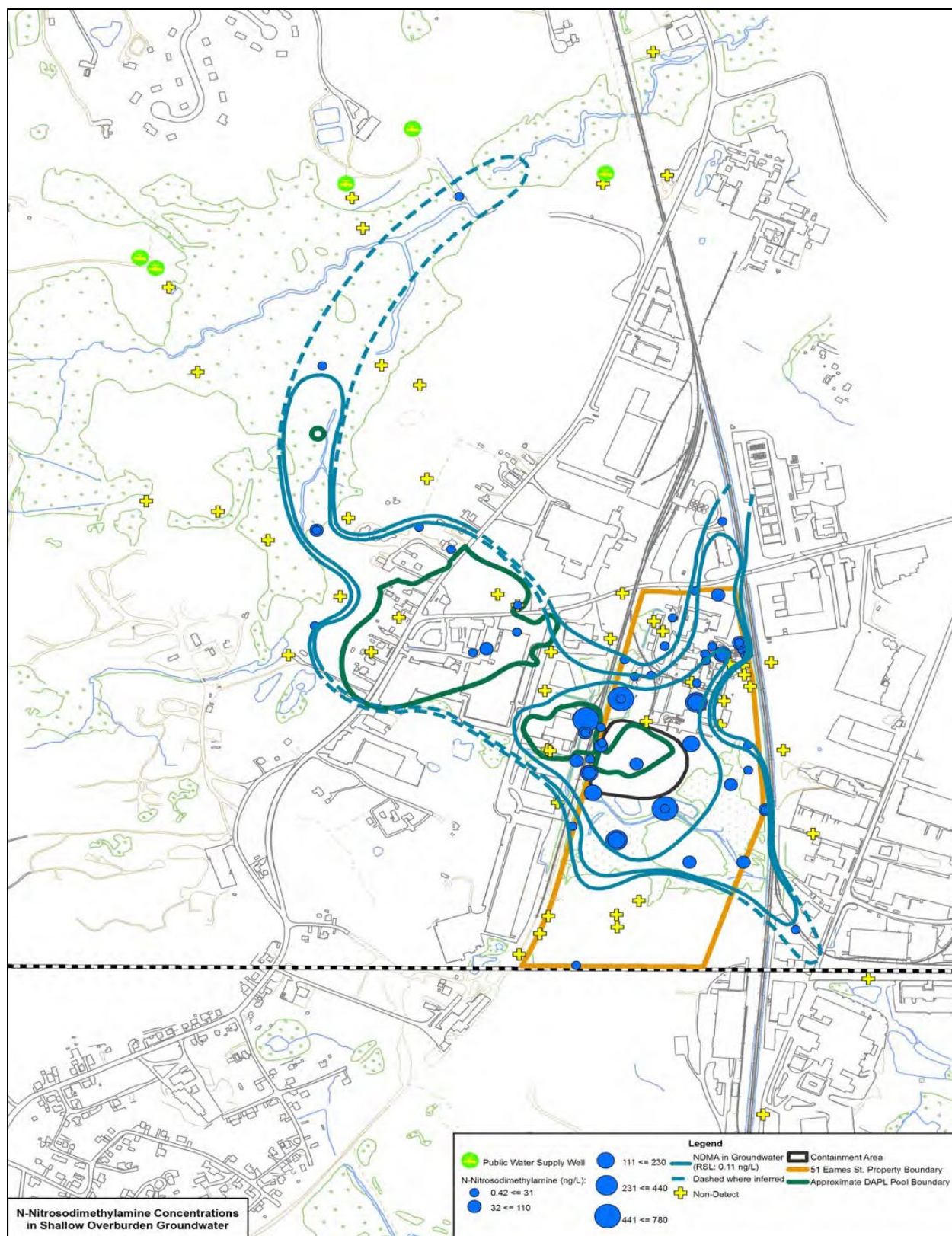


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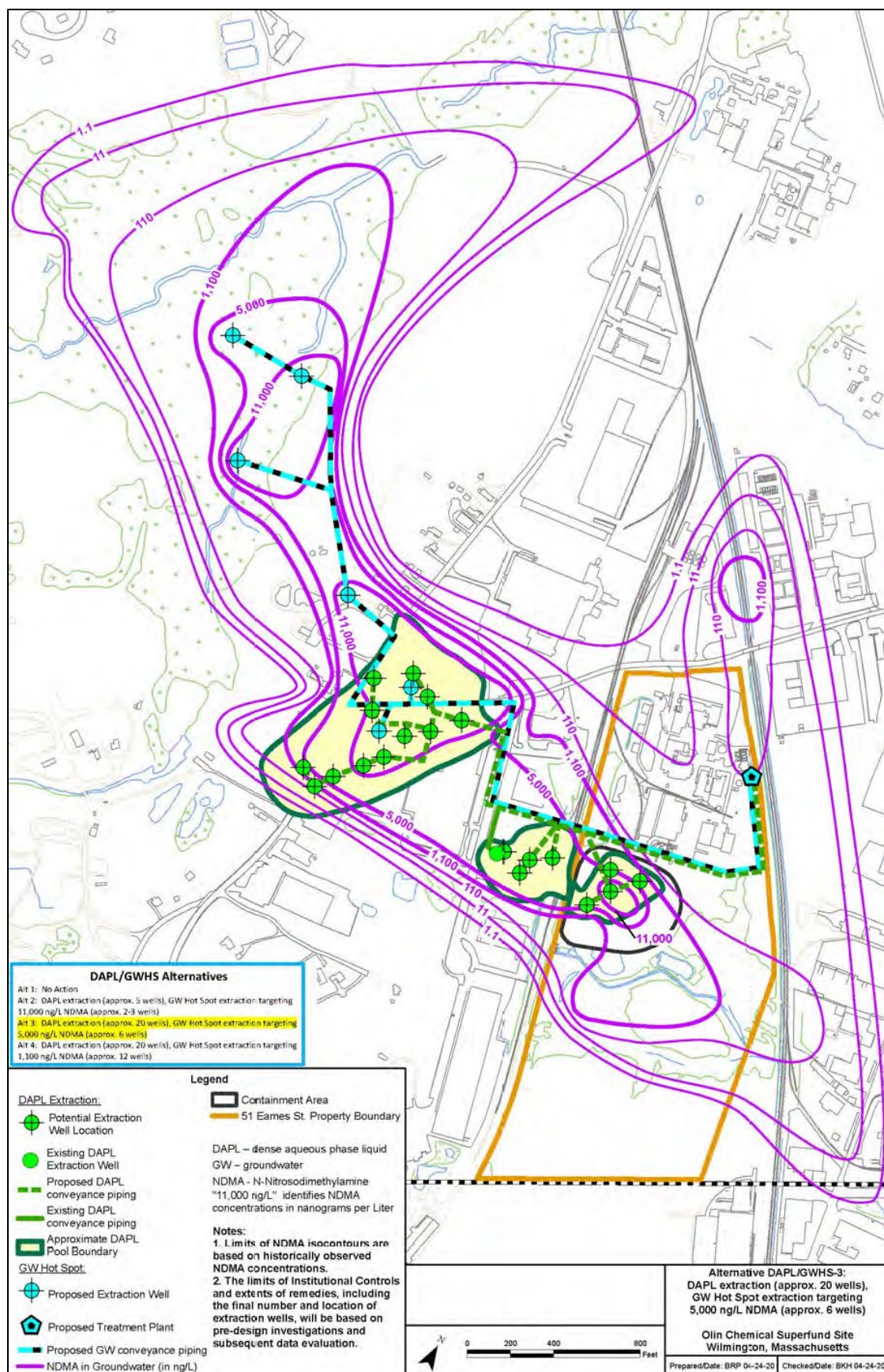


Figure - 5

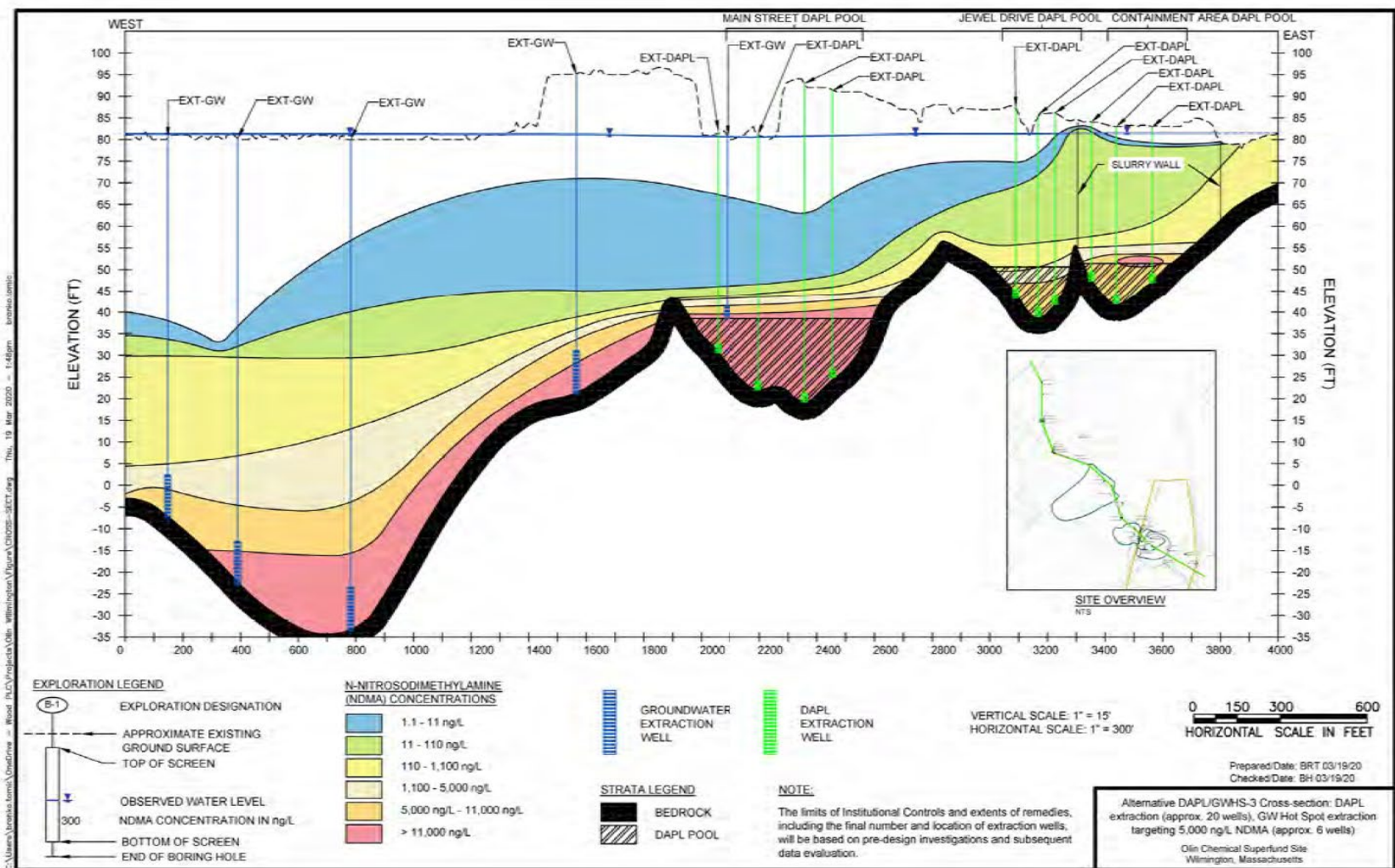


Figure - 6

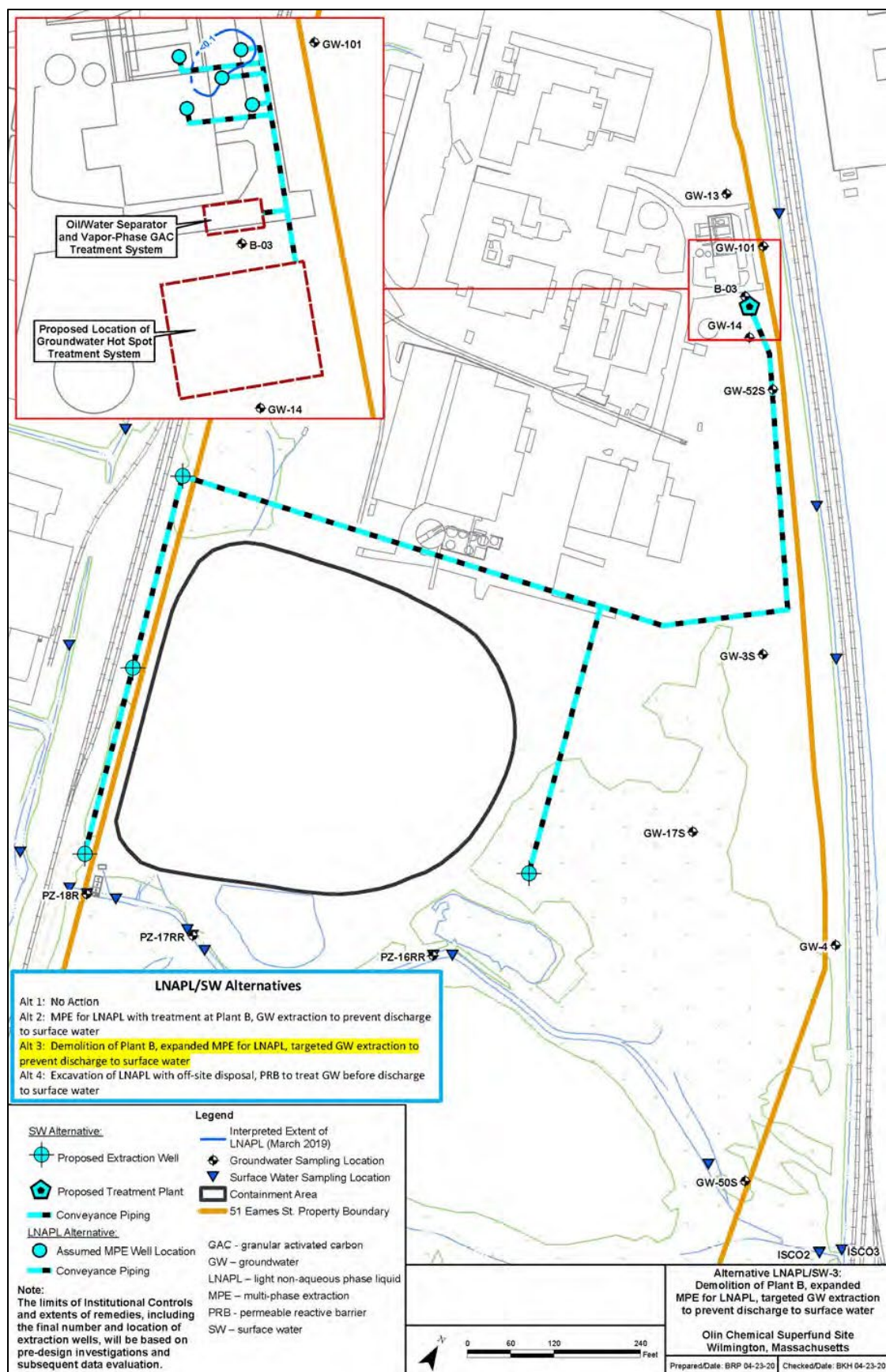


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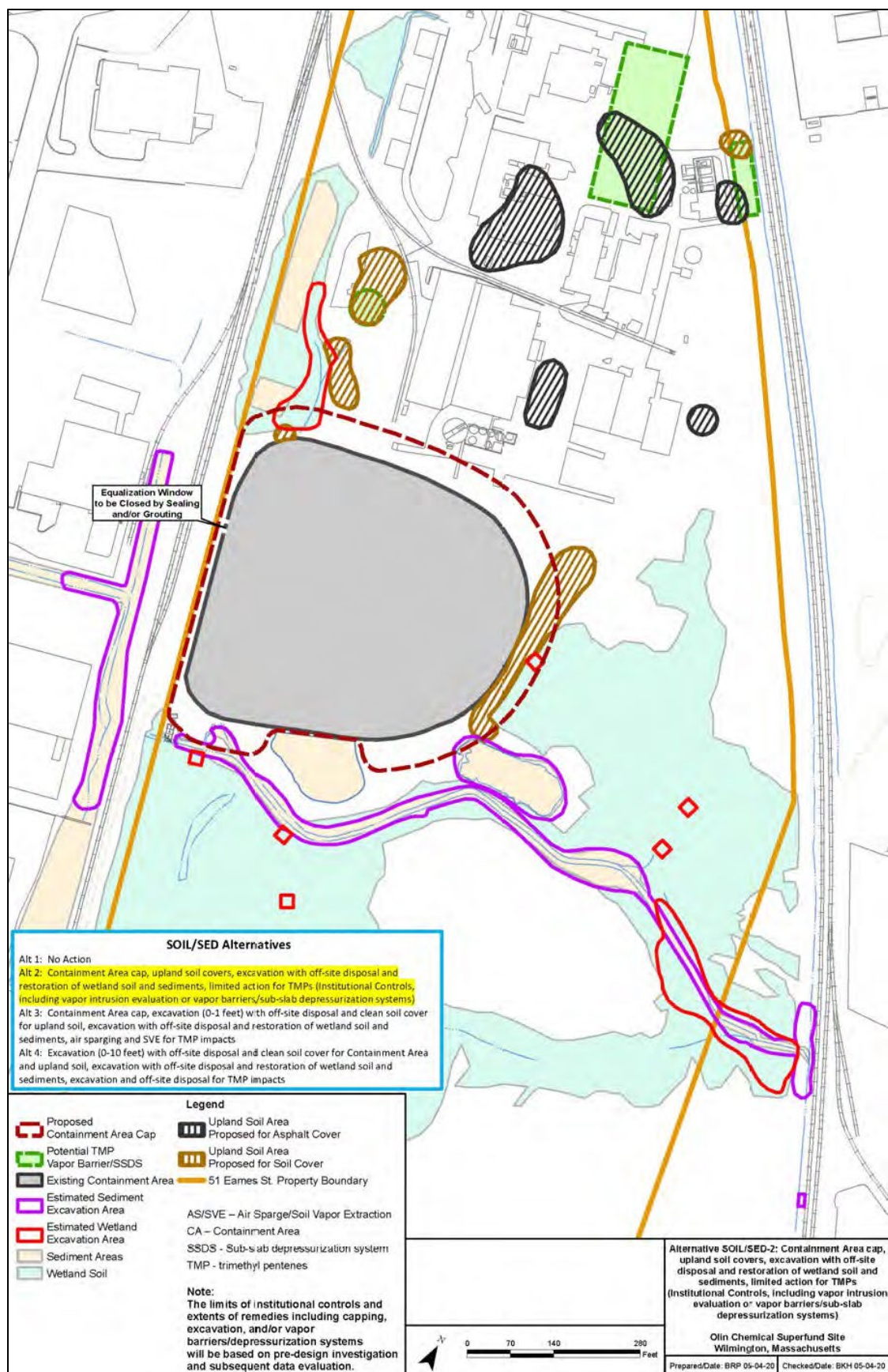


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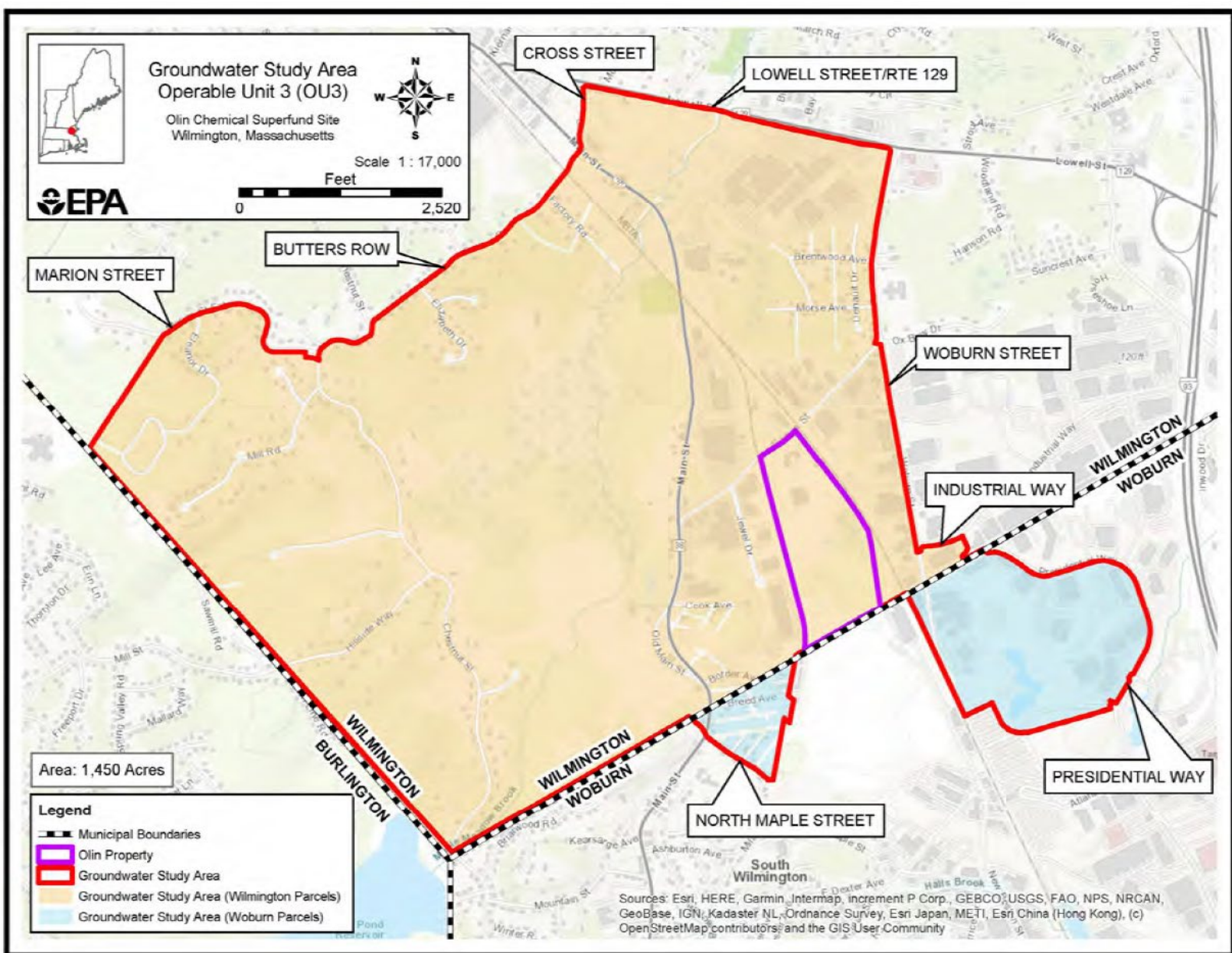


Figure - 9